PRIMARY AND SECONDARY A. C. POWER

Four 120/208 volt, 400 cycle, constant frequency, three phase, 60 KVA, A. C. generators, each driven by an engine mounted hydro-mechanical constant speed drive, operate in parallel to supply primary electric power for the airplane. The generator control and protection system includes exciter protection, selective overvoltage protection, over and underspeed protection, and a semi-automatic synchronizing system. Faults in the generator, its feeders, or any part of bus system are isolated by an overlapping differential current sensing arrangement, designed in such a manner that a protective device will operate should a fault occur at any point in the system. The bus system layout is essentially in accordance with MIL-E-7614 "General Specification for Installation of Aircraft Alternating Current Electrical Equipment" which provides for a separate bus for each generator, all four of which are tied together through a synchronizing bus by means of appropriate contactors. Extensions of two of the buses carry A. C. power forward from the main A. C. power junction box to the systems engineer's station for distribution in the cockpit area.

One auxiliary 60 KVA A. C. generator, identical to the generators used to supply primary power, is driven at constant speed by a gas turbine auxiliary power plant. This generator provides a secondary source of A. C. power which is normally used for ground operations and pre-flight check-out. Since the auxiliary power plant is being designed for high altitude operation, this generator may also be used as an emergency power source. The output of the auxiliary generator is fed into the A. C. bus system at the systems engineer's station. See A. C. system diagram.

D. C. POWER

The required 28 volt direct current power is supplied by four, 100 ampere transformer-rectifiers which are regulated in voltage and operate in parallel. One transformer-rectifier is supplied with A. C. power from each of the four main A. C. buses. The output of the transformer-rectifier units is fed into a two-segment D. C. bus onto which one 36 ampere-hour battery is connected through an appropriate battery relay. The 28 volt system control includes overvoltage protection and the main D. C. buses are protected against feeder faults by reverse current relays in each feeder. See D. C. system diagram.